

REMARKS/ARGUMENTS

Claims 1 and 3-40 now stand in the present application, claims 1, 3, 5, 7, 8, 10, 11, 18, 19, 26, 27 and 29 having been amended and claim 2 having been canceled. Reconsideration and favorable action is respectfully requested in view of the above amendments and the following remarks.

In the Office Action, the Examiner has objected to the specification for a number of informalities. As noted above, Applicants have corrected each of the technical deficiencies pointed out by the Examiner. Accordingly, the Examiner's objections to the specification are believed to have been overcome.

The Examiner has also objected to claims 7-8, 18-19, 26-27 and 29-40 for a number of informalities. As noted above, Applicants have amended all of these claims to correct the deficiencies pointed out by the Examiner. Accordingly, all of these claims are also believed to overcome the Examiner's objections.

The Examiner has also rejected claims 1-9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim subject matter which Applicants regard as the invention. More particularly, the Examiner pointed out that the terminology "each one" is indefinite in claim 1. As noted above, Applicants have amended claim 1 to more clearly recite that each wheelpost has an interleaved system of three fillets and three tangs. Accordingly, the Examiner's § 112, second paragraph, rejection of claims 1-9 is also believed to have been overcome.

Before turning to the Examiner's rejections of the claims over the cited art, Applicants wish to note that their invention is directed to a specific configuration of

wheelposts and buckets so as to cooperatively fit together so as to reduce the occurrence of peak stresses during operation. In addition, Applicants' invention is directed to the first and second stages of a turbine wherein the number of buckets is reduced from approximately ninety-two to sixty based on the configuration disclosed and claimed in the present application. Applicants believe that their configuration is a distinct and patentable departure from those in the prior art and that they have described in detail how their configurations of wheelposts and buckets patentably defines over the state of the prior art. It is also respectfully submitted that the configurations disclosed and claimed in the present application are not merely choices of engineering design but are specifically created so as to reduce operating stresses in the first and second stages of a turbine and yet at the same time reduce the number of moving parts required to accomplish the smooth operation of the turbine.

In the Office Action, the Examiner has rejected claims 10-13, 21, 25 and 29-30 under 35 U.S.C. § 102(b) as being anticipated by United Kingdom Patent 677,142 (hereinafter the '142 patent). Applicants respectfully traverse the Examiner's § 102 rejections of the claims based on the '142 patent.

The '142 patent states on page 2, lines 1-3 that "[t]he included root angle, that is the angle of taper between the inclined sides, is approximately 30 to 40°." Applicants' invention is patentably different from the '142 patent with respect to the angle between the faces of the uppermost tangs as shown, for example, in Figures 10 and 12, respectively, for a bucket and wheelpost. More particularly, the angle defined by 2E is greater than the corresponding angle identified in the '142 patent as ranging from 30 to 40°. More particularly, one half of the angle is defined by the letter "E" to be 20.782°

from the center line and thus the total angle is 41.564° when two tangent lines are drawn along the faces of the uppermost tangs within Figures 10 and 12. If an angle was formed by the intersection of two tangent lines to the lowermost tang at the center line, the angle would be even greater than 41.564°. Accordingly, the bucket and wheelpost arrangement of Applicants' invention patentably differs from that of the '142 patent.

Independent claims 10, 11 and 29 have been amended to more clearly recite the patentable distinction of the angle from tangent lines being drawn along the faces of the uppermost tangs to be greater than 40°. Since the cited art discloses and claims a range for this angle for no more than 30 to 40°, it is respectfully submitted that Applicants' invention patentably defines over the '142 patent. Moreover, it should be understood that this is not a mere matter of design choice. This is emphasized by the fact that the bottom tang does not lie along the same parallel angle along the face of the uppermost tangs in Applicants' invention. Thus, the angle for the lower tang is even greater than 41.564°. In any event, independent claims 10, 11 and 29, and their respective dependent claims, are believed to patentably define over the '142 patent.

The Examiner has also rejected claims 10-17, 21-25 and 29-32 under 35 U.S.C. § 102(b) as being anticipated by Goodwin. Applicants respectfully traverse the Examiner's § 102 rejection of the claims as being anticipated by Goodwin.

Goodwin suffers the same deficiency as does the '142 patent. More particularly, as clearly stated in the Table at column 3 of the cited reference, the angle between the tangent lines along the opposite faces of the tang varies from 35 to 40°. Accordingly,

Applicants' invention in which this angle is greater than 40° patentably defines over Goodwin for the same reasons given above with respect to the '142 patent.

The Examiner has also rejected claims 1-2 under 35 U.S.C. § 103(a) as being unpatentable over Hill. Applicants respectfully traverse the Examiner's § 103 rejection of the claims.

As clearly shown in Figures 2-4 and as described at column 2, line 5 to column 3, line 13 of Hill, the cited reference does not rely strictly on a configuration of wheelposts and buckets with tangs and fillets for maintaining the blade portions within the platform. More particularly, Hill provides a lip 9 on one side of its blade and a lip 38 on the other side of the blade to form a groove 16 into which wire 19 is positioned, so as to maintain the blade in position against thrusting and centrifugal forces. Thus, Hill discloses a very different structure from that of Applicants' invention in that it requires lip and wire structures to position and lock into place the blades into the rotor. In addition, as shown in Figures 2 and 3, Hill does not have a symmetrical arrangement of fillets and tangs on either side of a center line of the blade root portion. More particularly, the lowermost portion of each blade root on one side has a flat lip portion 9 and thus is not made up of a tang. In addition, the upper structures of the rotor and blade roots are also not made up of tangs and filets in that the disclosure refers to these structures as "uniform serrated cross-sectional slots" for the rotor, and a "serrated" fir tree for the blade root.

In order to more clearly patentably define claim 1 over the cited Hill reference, Applicants have amended claim 1 to more clearly recite that each wheel and bucket is symmetrically formed to have three fillets and tangs on each side of a center line along the longitudinal axis of the bucket or wheelpost. Since Hill does not teach or suggest

Applicants' invention, as now more clearly recited in amended claim 1, claim 1 and its respective dependent claims are believed to patentably define over the cited reference.

The Examiner has also rejected claims 4 and 6 under 35 U.S.C. § 103 as being unpatentable over Hill in view of Johnson. Applicants respectfully traverse the Examiner's § 103 rejection of the claims over the combination of Hill and Johnson.

Johnson has merely been cited by the Examiner for disclosing a turbine blade having buckets with a bottom tang formed having more than one radius of curvature. Accordingly, it should be clear that Johnson does not solve the deficiency noted above with respect to Hill. Accordingly, it is respectfully submitted that claims 3-8 patentably define over the cited references taken either singly or in combination for the same reasons given above with respect to claim 1.

Still further, with respect to claims 7 and 8, it should be noted that the Examiner in rejecting these claims stated that the radii curvatures for the bottom bucket tang were nothing more than matters of choice and design. Applicants respectfully disagree. Nowhere does Hill even disclose the dimensions of its bottommost tang. There are no radii dimensions given for this tang nor are there any radii dimensions given for the upper tangs in Hill. In fact, both Hill and Johnson disclose a blade root with a flat surface at its bottom as opposed to a tang. To the contrary with respect to Applicants' invention, Applicants have disclosed and claimed specific dimensional arrangements for not only the bottommost tang but also the uppermost tangs and it is noteworthy that these dimensions are not the same for the bottommost and uppermost tangs. Thus, it is respectfully submitted that Applicants' invention is much more than merely matters of choice and design.

The Examiner has rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Hill in view of Caruso. Applicants respectfully traverse the Examiner's § 103 rejection of claim 9.

The Examiner has merely relied on Caruso for disclosing that the outer tang edge of each wheelpost is scalloped. Accordingly, it should be clear that Caruso does not solve the deficiencies noted above with respect to Hill. Accordingly, claim 9 is believed to patentably define over the cited references taken either singly or in combination for the same reasons as given above with respect to claim 1.

The Examiner has also rejected claims 14-19, 22-24, 26-27 and 31-40 Under 35 U.S.C. § 103(a) as being unpatentable over the '142 patent in view of Johnson. Applicants respectfully traverse the Examiner's § 103(a) rejection of the claims over the combination of the '142 patent in view of Johnson.

As previously stated, Johnson has merely been cited by the Examiner for disclosing buckets having tangs with more than one radius of curvature. Accordingly, Johnson does not solve the deficiencies noted above with respect to the '142 patent. Accordingly, these claims are believed to patentably define over the cited references taken either singly or in combination for the same reasons given above with respect to independent claims 10, 11 and 29.

The Examiner has also rejected claims 18-19, 26-27 and 33 under 35 U.S.C. § 103(a) as being unpatentable over Goodwin. Applicants respectfully traverse the Examiner's rejection of the claims as being obvious over Goodwin.

These claims are believed to patentably define over Goodwin for the same reasons given above with respect to independent claims 10, 11 and 29. Moreover,

Applicants disagree with the Examiner with respect to the specific dimensions given in these dependent claims as being mere matters of choice of design.

The Examiner has also rejected claims 20 and 28 under 35 U.S.C. § 103(a) as being unpatentable over the '142 patent in view of Caruso. Applicants respectfully traverse the Examiner's §103 rejection of the claims over the '142 patent in view of Caruso.

Caruso simply does not solve the deficiencies pointed out with respect to the '142 patent. More particularly, these claims patentably define over the cited references taken either singly or in combination for the same reasons given above with respect to independent claims 10 and 11.

The Examiner has also rejected a number of the claims over double patenting with co-pending Application No. 10/774,400. Applicants respectfully submit that in view of the above-described claim amendments the Examiner's double patenting rejection is believed to have been overcome.

More particularly, each of independent claims 1, 10, 11 and 29 clearly recites that all of the claims in this application are directed to the first and second stages of a turbine. In addition, independent claims 10, 11 and 29 now further recite that the angle formed by tangent lines along the uppermost tangs is greater than 40°. The cited application is directed to wheelposts and bucket arrangements for the third stage of a turbine and has a 50° angle between tangent lines along the uppermost tangs. The claims of that application have been amended to more clearly recite that the claims are limited to the third stage of a turbine and an angle of 50°. Thus, the claims of the two

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applications are no longer directed to the "same invention." Accordingly, the Examiner's double patenting rejection of the claims is believed to have been overcome.

Therefore, in view of the above amendment and remarks, it is respectfully requested that the application be reconsidered and that all of claims 1 and 3-40, now standing in the application, be allowed and that the case be passed to issue. If there are any other issues remaining which the Examiner believes could be resolved through either a supplemental response or an Examiner's amendment, the Examiner is respectfully requested to contact the undersigned at the local telephone exchange indicated below.

Respectfully submitted,

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